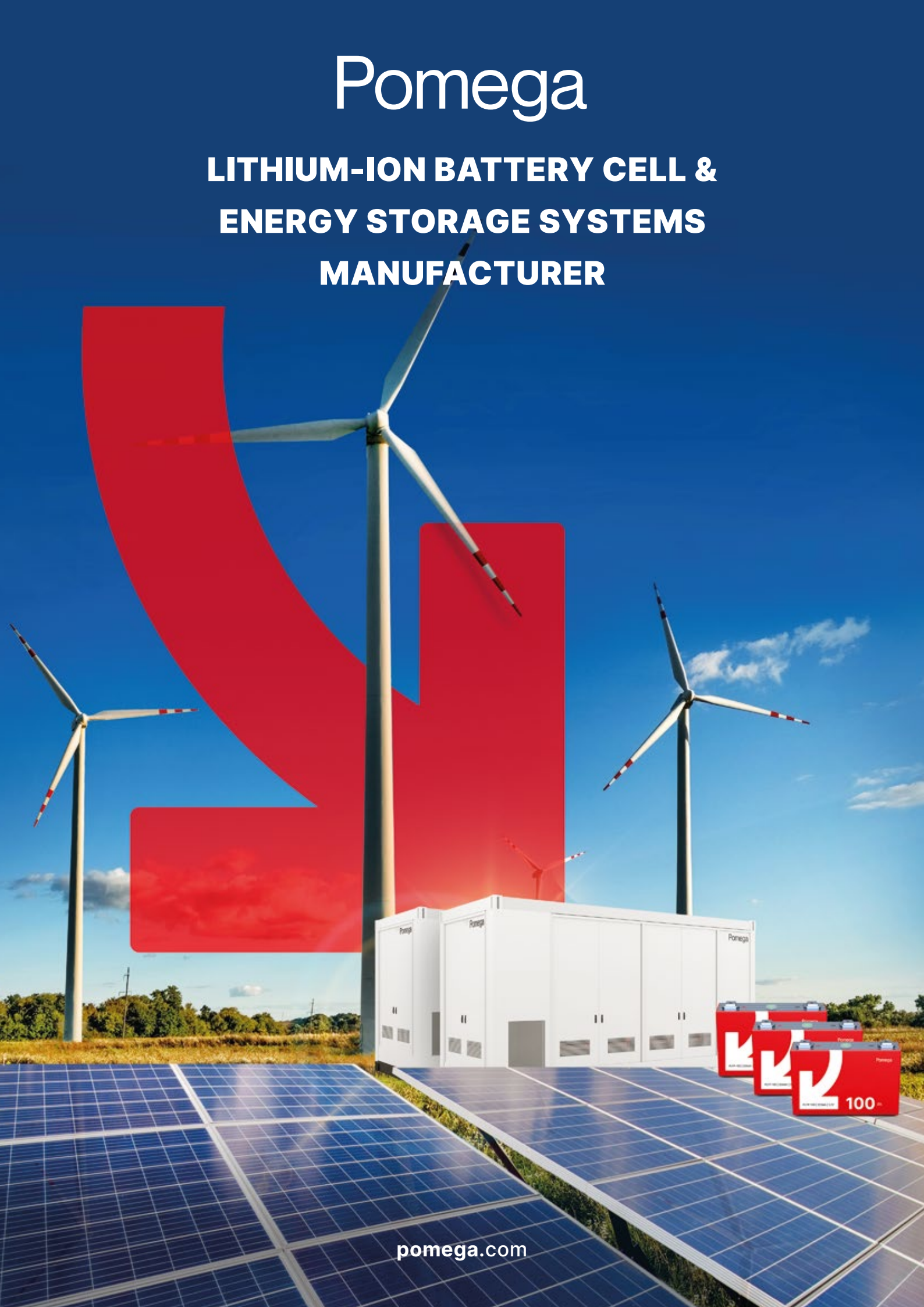
Pomega

LITHIUM-ION BATTERY CELL & ENERGY STORAGE SYSTEMS MANUFACTURER



pomega.com

ENERGY STORAGE **TECHNOLOGIES**

Pomega Energy Storage Technologies Inc.: Pioneering Sustainable Energy Solutions

Pomega Energy Storage Technologies Inc., a subsidiary of Kontrolmatik, is leading Türkiye's transition towards a sustainable energy future with its state-of-the-art Lithium-Iron Phosphate (LFP) battery cell gigafactory in Polatlı, Ankara. This 100,000-square-meter facility stands as a testament to the company's unwavering commitment to innovation, technological advancement, and environmental responsibility.

With the successful commissioning of the first phase of the gigafactory in 2023, the production capacity has reached 500 MWh. The second phase will commence in the fourth quarter of 2024, increasing the capacity to 2 GWh per year. By 2027, the aspiration is to achieve a capacity of 6 GWh per year.

2016
For energy storage systems R&D activities started.

2017
The first energy storage project in Europe is completed.

2020
The contract for the first energy storage project in Türkiye was signed.

2021
Investment in a lithium-ion battery cell factory started.

2022
Türkiye's first standalone energy storage electricity supply license with a capacity of **250MW/1GWh**

2023
Phase 1 Annual Capacity **500MWh**

2024
Total Capacity After Phase 3 **3GWh**

LITHIUM-ION BATTERY CELL **GIGAFACTORY**

Pomega Energy Storage Technologies Inc. is committed to driving sustainable energy solutions through innovative technology and responsible production practices, supporting a greener and more resilient future for all.

- The region's first Prismatic Lithium-Ion (LFP) Battery Cell (Factory Opened in August'23)
- LFP battery cells and energy storage systems production
- 500 MWh/year inaugural capacity (will be increased to 2 GWh/year in 2024)
- Integrated production facility on an area of 100.000 m²
- Low emission giga factory with zero waste and carbon-neutral production
- LEED Certification, Roof-top SPP, waste heat recovery, rainwater harvesting and more

Kontrolmatik Technologies

GROUP STRUCTURE

With extensive expertise in industrial processes, power plants, and transportation infrastructure, projects are designed to accelerate operations, improve efficiency, and reduce carbon emissions. Through its subsidiaries, Kontrolmatik leads in pioneering sustainable technologies, paving the way for a carbon-neutral and habitable future.

Kontrolmatik Technologies

Kontrolmatik Technology is a System Integrator and Technology Provider. It offers end-to-end digital solutions for the Energy, Industrial Process, Mining and transportation sectors.

Pomega Energy Storage Technologies

Pomega Energy Storage Technologies, a subsidiary of Kontrolmatik, is a manufacturer of Lithium-Ion (LFP) Battery Cells and Energy Storage Systems. Pomega Energy Storage Technologies Factory is built on approximately 100,000 m² in Polatlı, Ankara. The first phase of the plant, of which the groundbreaking) was held in 2022, was commissioned in 2023 with a capacity of 500 MWh/year. By the end of 2024, with the commissioning of the additional phase, it is planned to reach a capacity of 2GWh/year.

Pomega Energy Storage Technologies USA

Pomega Energy Storage Technologies, a wholly owned subsidiary of Kontrolmatik, is a manufacturer of Lithium-Ion Battery Cells, Packages and Container Solutions.

Enwair Energy Technologies

Enwair is preparing to take place in the market with silicon-based anodes and lithium-rich cathodes, which will be commercially marketed for the first time in Turkey and in the world.

Progresiva Energy Investments

Progresiva Energy Investment, a subsidiary of Kontrolmatik, is active in the fields of innovative and alternative energy investments and energy trade. Progresiva is a clean energy investment company which has developed Türkiye's first and largest utility-scale Energy Storage Project with 1GWh energy storage capacity. Progresiva aims to add clean energy projects to its investment portfolio or bring them together with potential investors, which will develop world wild.

Pomega Energy Storage Technologies

Pomega Energy Storage Technologies: Integrated Solutions for Grid Optimization

Pomega Energy Storage Technologies are integrated energy storage systems that facilitate the storage of energy generated from the selected energy source at the preferred time in Lithium-Ion batteries for utilization when necessary. These systems play a crucial role in optimizing power grids by enabling flexible energy management and enhancing grid stability.

Storing and Transmitting Electrical Energy for Grid Stability

The primary function of Pomega Energy Storage Systems within power grids is to convert electrical energy into a storable form, store it, and reintroduce it to the grid as electrical energy when demand arises. This ability to store and release energy on demand allows grid operators to effectively manage fluctuations in energy supply and demand, thus ensuring grid stability and reliability.

Integrated Control Systems for Safe and Efficient Operation

Pomega Energy Storage Systems are equipped with advanced control and management systems to ensure safe and seamless operation. These systems are not only facilitate regional control but also enable coordinated control throughout the national grid. This comprehensive control capability ensures the efficient integration of renewable energy sources and enhances the overall resilience of the power grid.

Optimizing Revenue and System Security through Energy Management

Pomega leverages its self-developed energy management system (EMS) to optimize charging and discharging cycles, daily routines, and energy trading strategies. This intelligent EMS enhances revenue generation through optimized energy trading while ensuring system security and stability. The EMS continuously learns and adapts to changing conditions, ensuring long-term efficiency

Pomega's commitment to sustainability extends beyond its products.

The company has meticulously designed its manufacturing processes to minimize environmental impact, adhering to the highest eco-firendly standards Its dedication to sustainable practices extends throughout the entire battery lifecycle, from raw material to recycling.

Pomega's LFP battery cells, battery packs, and energy storage systems are renowned for their exceptional performance, reliability, and long lifespan, making them the preferred choice for a wide range of applications, including power plants, national grids, factories, residential settings, the automotive industry, and any areas demanding robust and sustainable power solutions.

The establishment of Pomega's giga factory is not just a technological leap forward; it is also a catalyst for job creation. The first phase has already generated over 250 employment opportunities, demonstrating the company's commitment to fostering economic growth and empowering the local community. With the completion of subsequent phases, Pomega Energy Storage Technologies Inc. aims to create a total of 600 jobs, further revitalizing the region's economic landscape.

Pomega Energy Storage Technologies Inc. stands as a shining example of Türkiye's technological prowess, its dedication to sustainable energy solutions, and its commitment to creating a greener and more resilient future. As the company continues to innovate and expand its operations, it remains steadfast in its mission to empower Türkiye's transition towards a more sustainable and energy-independent future.

System Integrator EPC
Solution Provider Mobile
Solution Provider
R&D Center

Battery Cell & Energy
Storage Systems
Producer

Electricity Trader &
Energy Storage Facility
Investor

ENERGY STORAGE FOR RESIDENTAL

Residential Energy Storage Systems. Empowering Homes with Renewable Energy.

Our residential energy storage solutions revolutionize access to renewable energy. By integrating with solar or wind power setups, homeowners gain autonomy over energy usage and reduce dependency on conventional grid power. Capturing surplus renewable energy during peak production, our systems ensure a consistent electricity supply even when renewable sources are inactive.

This stored energy can also be sold back to the grid, offering additional income. With intelligent recharging during off-peak hours, homeowners save on energy costs while supporting grid efficiency. Embracing our solutions enables energy independence, decreases grid reliance, and fosters a sustainable energy future.

FEATURES		
One Package with Inverter and Battery	Long Lifetime	Easy Installation and Operation
Advanced Energy Management	Reliable and Safe Technology	Expandable Capacity
On-Grid and Off-Grid Applications	Elegant Design	Connectivity
Compatible with Third-Party Systems	Online Monitoring	

ENERGY STORAGE FOR INDUSTRIAL PLANTS

Energy Storage: Driving Carbon-Neutral and Self-Sufficient Economies

In the quest for sustainable energy solutions, energy storage emerges as a pivotal player, facilitating the transition to carbon-neutral and self-sufficient economies. Its versatility empowers industries to optimize energy source selection, mitigate price volatility, balance energy grids, promote renewable integration, and enhance economic competitiveness.

By storing excess energy and deploying it strategically, energy storage systems offer cost savings, stability, and efficiency, making them essential for sustainable energy management and industrial success in the face of environmental challenges.

APPLICATIONS	
Peak Shaving	Backup Power
Load Shifting	Grid Flexibility Services
UPS / Bridging Power	Black Start
Maximization of Usable Energy	

ENERGY STORAGE FOR POWER PLANTS

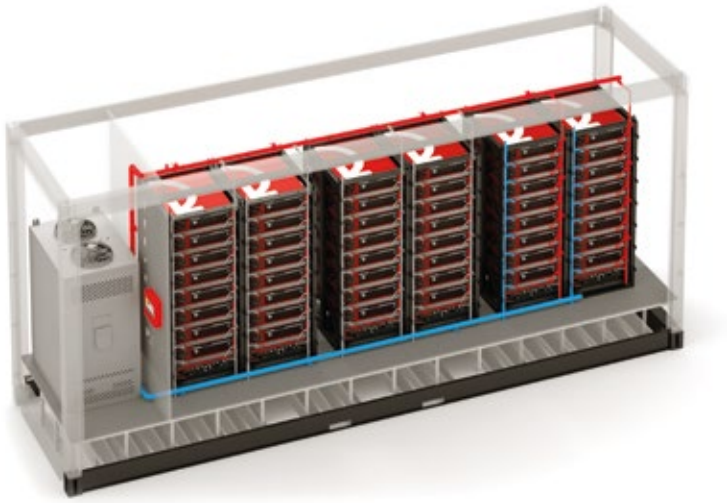
Easy Integration | Modular | Mobile Plug | Remote Control | High Efficiency | Multitasking

Energy Storage Systems: A Key Enabler of Renewable Integration

The intermittent nature of renewable energy sources, such as solar and wind, poses a challenge in maintaining grid stability and meeting baseload demand. Traditional power grids rely on consistent baseload power from fossil fuel-fired plants, but renewable energy sources can contribute significantly to grid stability if effectively integrated.

Energy storage systems offer a transformative solution by enabling the storage of excess renewable energy when production is abundant and its distribution when demand peaks. This ability to store and dispatch energy on demand mitigates the intermittency of renewable sources, making them more predictable and reliable.

As the world transitions towards a sustainable energy future, energy storage systems assume a pivotal role in reducing reliance on fossil fuels and accelerating the integration of renewable energy sources. By enabling a more stable and reliable power grid, energy storage systems are paving the way for a cleaner and more sustainable future.



Applications

- Peak Shaving
- Load / Peak Shifting
- Spinning Reserve Displacement
- Ramp Rate Control
- Frequency Regulation
- Energy Arbitrage
- Black-Start
- UPS / Bridging Power
- Transitional Power
- Power Factor Correction

SERVICES	
Operation and Maintenance	Adaptable for Different Energy Markets
Quick Malfunction Response	Capacity and warranty Augmentation

ENERGY STORAGE FOR CHARGING STATIONS

Energy Storage Systems: Driving Electric Vehicle Charging Infrastructure Deployment

Energy storage systems (ESS) play a pivotal role in accelerating the deployment of electric vehicle (EV) charging infrastructure, particularly in regions with limited grid capacity. By optimizing the utilization of renewable energy sources like solar power, ESS ensure a reliable and sustainable electricity supply for charging stations. Integrating ESS with solar power plants fosters decentralized and flexible charging infrastructure development. Additionally, ESS significantly reduce initial investment costs by mitigating the need for costly grid upgrades, enabling charging station installation in previously inaccessible areas. Overall, ESS are essential for promoting sustainable and efficient EV charging ecosystems.

APPLICATIONS	
Demand Control	UPS / Bridging Power
Peak Shaving	Backup Power
Load Shifting	Grid Flexibility Services

STAND-ALONE ENERGY STORAGE

Embrace the Future of Energy Storage

Standalone energy storage facilities are essential for meeting the increasing demand for reliable energy storage as renewable energy sources gain prominence. These facilities capture excess renewable energy, contributing to grid stability and sustainability. They offer comprehensive solutions that optimize energy utilization and reduce costs, providing a reliable energy source for both the national grid and new power plant investments. Equipped with advanced technology, these facilities ensure 24/7 monitoring and control for optimal performance. Key benefits include enhanced grid stability, scalability to meet evolving energy storage needs, cost-effectiveness, and reliability. These facilities are crucial for enabling a resilient and sustainable grid as the world transitions to cleaner energy sources.

APPLICATIONS	
Advanced Energy Management	Reliable and Safe Technology
Off-Grid & On-Grid Applications	Expandable Capacity
Long Lifetime	

PORTABLE ENERGY STORAGE SYSTEMS

Reliable, Durable, and Advanced Energy Solutions for Modern Needs

Pomega portable batteries are engineered to ensure seamless operation, maximizing productivity and minimizing downtime. Designed for durability and reliability, Pomega's portable batteries are equipped with advanced technology and intelligent management systems, delivering consistent energy even in strenuous conditions. Expect unwavering reliability, enhanced productivity, and sustainable energy solutions with Pomega. Pomega portable batteries are the perfect energy storage solutions for L7 class vehicles, electric golf carts, and small area transportation.

MOBILITY APPLICATIONS		
Easy installation and operation	12V, 24V, 48V, 80V and 400V battery designs	Long Lifetime
Increasable capacity	Off-Grid Application	High Level Protection
Modular structure	Elegant Design	

MARINE ENERGY STORAGE SYSTEMS

Effortless Efficiency

Pomega's Marine Energy Storage Systems revolutionize marine exploration by offering exceptional cycle life, high energy density, and superior safety. With $LiFePO_4$ technology, vessels are no longer tethered to shore power, ushering in a new era of sustainable and independent exploration.

These systems provide extended range, exceptional power delivery, and rapid recharge capabilities, empowering vessels to venture further into uncharted territories and power demanding onboard systems effortlessly. Additionally, Pomega prioritizes sustainability by minimizing environmental impact through the use of non-toxic materials, seamless integration with solar panels for self-sufficient energy, and extended battery lifespans to reduce waste.

With compact designs and minimal maintenance requirements, Pomega's Marine Energy Storage Systems optimize onboard space and streamline operations, while advanced battery management systems ensure safety and maximize lifespan. Choose innovation, sustainability, and unparalleled performance with Pomega for an exhilarating nautical experience.

APPLICATIONS		
Easy Installation and Operation	Off-Grid Application	Communication interface bluetooth and CANBus
Increasable Capacity	Elegant Design	Serial Connection
Modular Structure	Long Lifetime	
12V, 24V, 48V, 80V and 400V Battery Designs	High Level Protection	

LFP Cells

Basic Properties	PLFP-100	PLFP-150	PLFP-302
Cell Type		$LiFePO_4$ - Prismatic	
Nominal Capacity	100Ah	150Ah	302Ah
Nominal Voltage		3.2V	
Limited Voltage in Charge		3.65V	
Final Voltage Discharge (>=0°C)		2.50V	
Discharge Temperature (**)		-15~50°C	
Charge Temperature		0~50°C	
Storage Temperature		-10~60°C	
Standard Charge/Discharge Rate (25°C)		0.5C / 0.5C	
Max. Continuous Charge/Discharge Rate	1C / 1C	1C / 1C	0.5C / 1C
Max. Pulse (30s) Charge/Discharge Rate	2C / 2C	1.5C(30S) / 2C(10S)	2C / 2C
ACR (25°C, 15%SOC,1KHz)	≤0.6mΩ	≤0.6mΩ	≤0.3mΩ
DCR (25°C, 50%SOC,100A/10s)	≤2.0mΩ	≤2.0mΩ	≤0.6mΩ
Capacity Retention (25°C, 100%SOC, 30days)		≥95%	
Capacity Retention (60°C, 100%SOC, 7days)		≥95%	
Self Discharge		≤3%/month (40% SOC ,25°C ± 2C)	
Cycle Life (*)		≥6000	
Recommended Range of SOC		5%-95%	
Physical Properties			
Humidity Range		0-85%RH (non-condensing)	
Altitude		<3000m	
Case		Prismatic - Aluminium	
Width	173.9 ± 0.5 mm	173.9 ± 0.5 mm	173.5 ± 1.0 mm
Depth	48.6 ± 0.5 mm	48.6 ± 0.5 mm	72.0 ± 1.0 mm
Height (No Pole)	115.6 ± 0.5 mm	166.6 ± 0.5 mm	204.5 ± 1.0 mm
Height (Including Pole)	119.4 ± 0.5 mm	170.4 ± 0.5 mm	208.8 ± 1.0 mm
Weight	2.0 ± 0.1 kg	2.90 ± 0.1 kg	5.49 ± 0.3 kg

(*) Test Conditions: 25°C, 90% DOD, 0.5C Charge/Discharge
(**) Performance may vary in different conditions

$LiFePO_4$ Modules




Basic Properties	PMS-1P4S100	PMS-1P8S100	PMS-1P12S100	PMS-2P4S100
Cell Type	$LiFePO_4$ - Prismatic			
Nominal Capacity	100Ah	100Ah	100Ah	200Ah
Nominal Voltage	12.8V	25.6V	38.4V	12.8V
Limited Voltage in Charge	14.6V	29.2V	43.8V	14.6V
Final Voltage Discharge (>0°C)	10.0V	20.0V	30.0V	10.0V
Discharge Temperature (**)	-15~50°C			
Charge Temperature	0~50°C			
Storage Temperature	-10~60°C			
Standard Charge/Discharge Rate (25°C)	0.5C / 0.5C			
Max. Continuous Charge/Discharge Rate	1C / 1C			
Max. Pulse (30s) Charge/Discharge Rate	2C / 2C			
Cell ACR (25°C, 15%SOC,1KHz)	≤0.6mΩ			
Cell DCR (25°C, 50%SOC,100A/10s)	≤2.0mΩ			
Cell Capacity Retention (25°C, 100%SOC, 30days)	≥95%			
Cell Capacity Retention (60°C, 100%SOC, 7days)	≥95%			
Self Discharge	≤3%/month (40% SOC ,25°C ± 2C)			
Cell Cycle Life (*)	≥6000			
Physical Properties				
Humidity Range	0-85%RH (non-condensing)			
Altitude	<3000m			
Case	Prismatic - Aluminium			
Width	175 ± 0.5 mm	175 ± 0.5 mm	175 ± 0.5 mm	175 ± 0.5 mm
Depth	233 ± 0.5 mm	430 ± 0.5 mm	627 ± 0.5 mm	233 ± 0.5 mm
Height (Including Porthead)	139 ± 0.5 mm	139 ± 0.5 mm	139 ± 0.5 mm	139 ± 0.5 mm
Weight	10 ± 0.1 kg	18 ± 0.1 kg	26 ± 0.1 kg	18 ± 0.1 kg

(*)Test Conditions: 25°C, 90% DOD, 0.5C Charge/Discharge
(**) Performance may vary in different conditions

Residential 1-Phase Energy Storage Systems

Inverter Properties	PRESS-505	PRESS-510	PRESS-515	PRESS-520
Max. Efficiency	97.3% (PV-AC), 94.0% (BAT-AC)			
[PV] Max. Power	9000W			
[PV] Max. Voltage	550V			
[PV] MPPT Voltage Range	200V-480V			
[PV] Max. Input Current	15A			
[PV] # of MPPT Trackers	2			
[BATT] Voltage Range	40V-60V			
[BATT] Max. Charge/Discharge Power	5000W			
[BATT] Max. Charge/Discharge Current	120A			
[AC] Nominal Output Power	5000W			
[AC] Nominal Voltage	220V/230V (Single Phase)			
[AC] Voltage Range	150V-300V (Adjustable)			
[AC] Max. Output Current	25A			
[AC] Frequency Range	45Hz-65Hz			
THDI	<3%			
Interface / Communication	Screen, CAN			
Warranty	10 Years			
Battery Properties				
Battery Type	LiFePO4			
Nominal Voltage	51.2V			
Operating Voltage Range	44V - 56.8V			
Nominal Capacity	100Ah	200Ah	300Ah	400Ah
Nominal Energy Capacity	5.12kWh	10.24kWh	15.36kWh	20.48kWh
Standard Charge/Discharge Current	50A / 50A	100A / 100A	150A / 150A	200A / 200A
Max. Continuous Output Current	100A	200A	300A	400A
Cycle Life (*)	≥6000 Cycles			
Charging Temperature	0~50°C			
Discharging Temperature (**)	-10~50°C			
Storage Temperature	-20~55°C			
Physical Properties				
Protection Level	IP20			
Dimension (WxDxH) (with antenna)	648x284x1282 mm	648x284x1732 mm	648x284x2182 mm	1296x284x1732 mm
Weight	90± 5 kg	140± 5kg	190± 5 kg	240± 5 kg

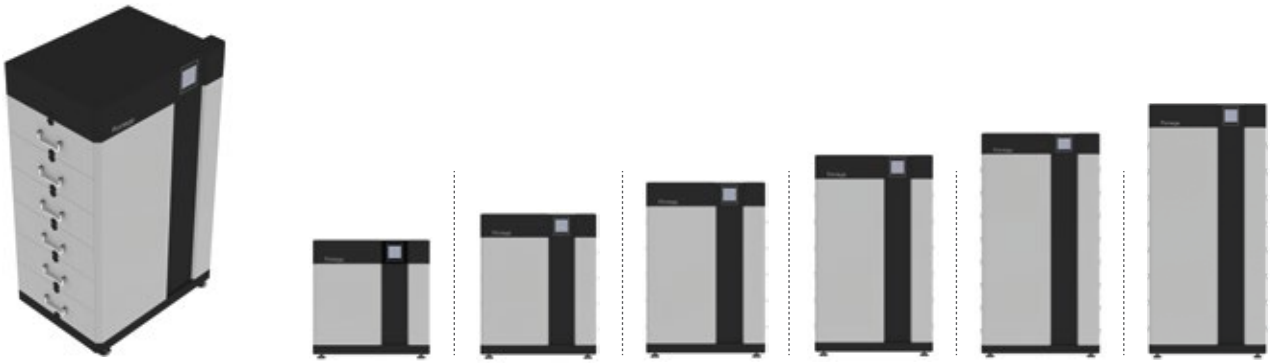
(*) Test Conditions: 25°C, 90% DOD, 0.5C Charge/Discharge
(**) Performance may vary in different conditions

Residential 3-Phase G Series Energy Storage Systems

Inverter Properties	PRESS-G1015	PRESS-G1020	PRESS-G1025	PRESS-G1030	PRESS-G1035	PRESS-G1040
Max. Efficiency	97.9% (PV-AC), 98.0% (BAT-AC)					
[PV] Max. Power	15000W					
[PV] Max. Voltage	1000V					
[PV] MPPT Voltage Range	160V-950V					
[PV] Max. Input Current	20A/30A					
[PV] # of MPPT Trackers	3 (two strings per MPPT)					
[BATT] Voltage Range	120V-600V					
[BATT] Max. Charge/Discharge Power	15000W / 11300W					
[BATT] Max. Charge/Discharge Current	50A / 50A					
[AC] Nominal Output Power	10000W					
[AC] Nominal Voltage	380V/400V/415, 3L+N+PE					
[AC] Voltage Range	260V-520V (Adjustable)					
[AC] Max. Output Current	3* 25A					
[AC] Frequency Range	45Hz-55Hz / 55Hz-65Hz (Adjustable)					
[AC] THDI	<5% (Rated Power)					
Interface / Communication	Screen, CAN					
Warranty	10 Years					
Battery Properties						
Battery Type	LiFePO4					
Nominal Voltage	153,6V	204,8V	256V	307,2V	358,4V	409,6V
Operating Voltage Range	132V - 170V	176V - 227V	220V - 284V	264V - 340V	308V-397V	352V-454V
Nominal Capacity	100Ah					
Nominal Energy Capacity	15.36kWh	20.48kWh	25.60kWh	30.72kWh	35.84kWh	40.96kWh
Standard Charge/Discharge Current	50A					
Max. Continuous Output Current	50A					
Cycle Life (*)	≥6000 Cycles					
Charging Temperature	0~50°C					
Discharging Temperature (**)	-10~50°C					
Storage Temperature	-20~55°C					
Parallel Connection	No					
Physical Properties						
Protection Level	IP65					
Dimension (WxDxH) (with antenna)	683x455x1330 mm	683x455x1480 mm	683x455x955 mm	683x455x1780 mm	683x455x1930 mm	683x455x2080 mm
Weight	220 ± 5 kg	270 ± 5,5 kg	320 ± 6 kg	370 ± 6,5 kg	420 ± 7 kg	470 ± 7,5 kg

(*) Test Conditions: 25°C, 90% DOD, 0.5C Charge/Discharge
(**) Performance may vary in different conditions

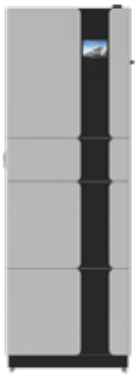
Stackable G Series
High Voltage LFP Batteries

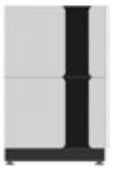


Basic Properties	PBG-153100	PBG-204100	PBG-256100	PBG-307100	PBG-358100	PBG-409100
Battery Type	$LiFePO_4$					
Nominal Voltage	153.6V	204.8V	256V	307.2V	358.4V	409.6V
Operating Voltage Range	134V-170V	179V - 227V	224V - 284V	268V - 340V	313V-397V	358V-454V
Nominal Capacity (*)	100Ah					
Nominal Energy Capacity	15.3kWh	20.4kWh	25.6kWh	30.7kWh	35.8kWh	40.9kWh
Max. Charge Voltage	172V	230V	288V	345V	403V	460V
Max. Cont. Charge/Discharge Rate	0,5 C - 0,5 C					
Cycle Life (*)	≥6000 Cycles					
Normal Operating Temperature	25°C					
Charging Temperature	0~50°C					
Discharging Temperature (**)	-10~55°C					
Storage Temperature	-20~55°C					
Self Discharge	Per month ≤ 3%					
Warranty	10 Years					
Parallel Connection	No					
Functional Properties						
Communication	CAN, RS485					
Scalibility	Serial Pack Addition					
Cooling	Natural					
BMS Protections	UV, OV, OC, UT, OT, SC					
LED Indicators	Alarm, Run, SOC					
Circuit Breaker	Yes (in the Master BMS unit)					
Compatible Inverter***	Deye, Victron, Senergy, Growatt, Solplanet, Hopewind					
Physical Properties						
Protection Level	IP65					
Humidity	0-85%RH (non-condensing)					
Altitude	<3000 m					
Dimension (WxDxH) (without connector and handle)	683x455x655 mm	683x455x805 mm	683x455x955 mm	683x455x1105 mm	683x455x1255 mm	683x455x1405 mm
Weight	170 ± 5 kg	230 ± 5,5 kg	280 ± 6 kg	330 ± 6,5 kg	380 ± 7 kg	430 ± 7,5 kg

(*) Test Conditions: 25°C, 90% DOD, 0.5C Charge/Discharge
(**) Performance may vary in different conditions
(***) Contact us for other inverter brands

Residential 3-Phase A and D Series Energy Storage Systems

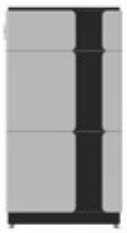


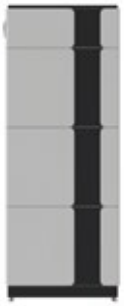


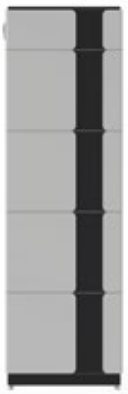
Inverter Properties	PRESS-A1012	PRESS-D1210
Max. Efficiency	97.9% (PV-AC), 98.0% (BAT-AC)	97% (PV-AC)
[PV] Max. Power	15000W	15600W
[PV] Max. Voltage	1000V	800V
[PV] MPPT Voltage Range	160V-950V	200V-650V
[PV] Max. Input Curent	20A/30A	26A/13A
[PV] # of MPPT Trackers	3 (two strings per MPPT)	2 (2+1 strings , MPPT)
[BATT] Voltage Range	120V-600V	40V-60V
[BATT] Max. Charge/Discharge Power	15000W / 11300W	12000W / 12000W
[BATT] Max. Charge/Discharge Current	50A / 50A	240A / 240A
[AC] Nominal Output Power	10000W	12000W
[AC] Nominal Voltage	380V/400V/415, 3L+N+PE	380V/400V, 3W+N+PE
[AC] Voltage Range	260V-520V (Adjustable)	-
[AC] Max. Output Current	3 * 25A	26.1A
[AC] Frequency Range	45Hz-55Hz / 55Hz-65Hz (Adjustable)	50/60Hz
[AC] THDI	<5% (Rated Power)	<3% (Rated Power)
Interface / Communication	Screen, WIFI, LAN	Screen, CAN
Warranty	10 Years	
Battery Properties		
Battery Type	LiFePO4	LiFePO4
Nominal Voltage	128V	51.2V
Operating Voltage Range	112V-140V	44V - 56.8V
Nominal Capacity	100Ah	200Ah
Nominal Energy Capacity	12.8kWh	10.24kWh
Standard Charge/Discharge Current	50A	100A
Max. Continuous Output Current	50A	200A
Cycle Life (*)	≥6000 Cycles	
Charging Temperature	0~50°C	
Discharging Temperature (**)	-10~55°C	
Storage Temperature	-20~55°C	
Parallel Connection	No	
Physical Properties		
Protection Level	IP65 (Battery / Internal Inverter)	IP65 Inv + IP20 Battery
Dimension (WxDxH) (with antenna)	648x275x1925 mm	648x200x990 mm (only battery)
Weight	185 ± 2 kg	135 ± 5 kg
Cooling	Natural Convection	Smart (Forced Convection)

(*) Test Conditions: 25°C, 90% DOD, 0.5C Charge/Discharge
(**) Performance may vary in different conditions

Stackable A Series
High Voltage LFP Batteries







Basic Properties	PBA-128100	PBA-192100	PBA-256100
Battery Type		$LiFePO_4$	
Nominal Voltage	128V	192V	256V
Operating Voltage Range	112V-140V	168V - 211V	224V - 282V
Nominal Capacity (*)		100Ah	
Nominal Energy Capacity	12.8kWh	19.2kWh	25.6kWh
Max. Charge Voltage	144V	216V	288V
Standard Charge/Discharge Current		50A / 50A	
Max. Cont. Charge/Discharge Current		50A / 50A	
Cycle Life (*)		≥6000 Cycles	
Normal Operating Temperature		25°C	
Charging Temperature		0~50°C	
Discharging Temperature (**)		-10~55°C	
Storage Temperature		-20~55°C	
Self Discharge		Per month ≤ 3%	
Warranty		10 Years	
Parallel Connection		No	
Functional Properties			
Communication		CAN, RS485	
Scalibility		Serial Pack Addition	
Cooling		Natural	
BMS Protections		UV, OV, OC, UT, OT, SC	
LED Indicators		Alarm, Run, SOC	
Circuit Breaker		Yes (in the Master BMS unit)	
Compatible Inverter***		Deye, Victron, Senergy, Growatt, Solplanet, Hopewind	
Physical Properties			
Protection Level		IP65	
Humidity		0-85%RH (non-condensing)	
Altitude		<3000 m	
Dimension (WxDxH)	648x200x1215 mm	648x200x1665 mm	648x200x2115 mm
Weight	140 ± 5 kg	200 ± 5,5 kg	260 ± 6 kg

(*) Test Conditions: 25°C, 90% DOD, 0.5C Charge/Discharge
(**) Performance may vary in different conditions
(***) Contact us for other inverter brands

Low Voltage Batteries

Basic Properties	PBL-51100	PBW-51100
Cell Type	$LiFePO_4$ - Prismatic	
Nominal Voltage	51.2V	
Nominal Capacity (*)	100Ah	
Nominal Energy Capacity	5.12kWh	
Operating Voltage Range	44V - 56.8V	
Maximum Charge Voltage	56.8V	
Standard Charge/Discharge Current	50A / 50A	
Max. Cont. Charge/Discharge Current	100A / 100A	
Limited Charge Current	10A	
Cycle Life (*)	≥6000 Cycles	
Normal Operating Temperature	25°C	
Charging Temperature	0~50°C	
Discharging Temperature (**)	-10~55°C	
Storage Temperature	-20~55°C	
Self Discharge	Per month ≤ 3%	
Warranty	10 Years	
Functional Properties		
Communication	CAN, RS485	
Scalibility	Max. 15 units in parallel	
Cooling	Natural	
Integrated Heater	No	
BMS Protections	UV, OV, OC, UT, OT, SC	
LED Indicators	Alarm, Run, SOC	
High Current Protection	Externally Replaceable Fuse	Internal
Compatible Inverter	Deye, Victron, Growatt, Solis, Senergy, Hopewind	
Physical Properties (***)		
Protection Level	IP20	IP65
Humidity	5% - 85% RH (non-condensing)	
Altitude	<3000 m	
Dimension (WxDxH) (without connector and handle)	446x532x160 mm (19 Inches - 3.5U)	445x610x185 mm
Weight	40±1 kg	50±1 kg
Power Terminals	Click Connectors	

(*) Test Conditions: 25°C, 90% DOD, 0.5C Charge/Discharge
(**) Performance may vary in different conditions
(***) Contact us for other invertor brands

Portable Marine Type
High Performance Batteries



Basic Properties	PBM-12100	PBM-12200	PBM-24100
Cell Type	$LiFePO_4$ - Prismatic		
Nominal Voltage	12.8V		25.6V
Operating Voltage Range	11.2V - 14.2V		22.4V - 28.4V
Nominal Capacity (*)	100Ah	200Ah	100Ah
Nominal Energy Capacity	1280Wh	2560Wh	2560Wh
Max. Charge Voltage	14.2V		28.4V
Recommended Charge/Discharge Current	50A/50A	100A/100A	50A/50A
Max. Cont. Charge/Discharge Current	100A/100A	200A/200A	100A/100A
Max. Charge/Discharge Current (<30s)	200A/200A	400A/400A	200A/200A
Capacity By Temperature	100 % (25°C), 94 % (0°C)		
Cycle Life (*)	≥6000 Cycles		
Normal Operating Temperature	25°C		
Charging Temperature	-20~50°C		
Discharging Temperature (**)	-20~50°C		
Storage Temperature	-20~55°C		
Warranty	10 Years		
Functional Properties			
BMS Protections	UV, OV, OC, UT, OT, SC		
Screen	No		
Communication Interfaces	Bluetooth, CAN		
CAN Communication Protocols	NMEA2000		
Parallel Connection	Yes (up to 8 batteries)		
Serial Connection	Yes (up to 48V)		
Safety Relay Control	Yes (over relay connector)		
Dry Contacts	No		
Protective Vent	Yes		
Internal Self Heating	Yes (integrated thermal heat-pad with control)		
Physical Properties			
Battery Case Material	PC-ABS		
Power Terminals	M8 Screw In		
Protection Level	IP65		
Humidity	5% - 85% RH (non-condensing)		
Altitude	<3000 m		
Dimension (WxDxH)	279x205x215 mm	475x205x215 mm	475x205x215 mm
Weight	13±1 kg	22±1 kg	22±1 kg

(*) Test Conditions: 25°C, 90% DOD, 0.5C Charge/Discharge
(**) Performance may vary in different conditions

Portable Standard Type Batteries



Basic Properties	PBK-12100	PBK-12200	PBK-24100
Cell Type	$LiFePO_4$ - Prismatic		
Nominal Voltage	12.8V		25.6V
Operating Voltage Range	11.2V - 14.2V		22.4V - 28.4V
Nominal Capacity (*)	100Ah	200Ah	100Ah
Nominal Energy Capacity	1280Wh	2560Wh	2560Wh
Max. Charge Voltage	14.2V		28.4V
Recommended Charge/Discharge Current	30A/30A	50A/50A	30A/30A
Max. Cont. Charge/Discharge Current	60A/60A	100A/100A	60A/60A
Max. Charge/Discharge Current (<30s)	-		
Capacity By Temperature	100 % (25°C), 94 % (0°C)		
Cycle Life (*)	≥6000 Cycles		
Normal Operating Temperature	25°C		
Charging Temperature	0~50°C		
Discharging Temperature (**)	-20~50°C		
Storage Temperature	-20~55°C		
Warranty	10 Years		
Functional Properties			
BMS Protections	UV, OV, OC, UT, OT, SC		
Screen	Yes (2.2 Inches)		
Communication Interfaces	Bluetooth		
CAN Communication Protocols	-		
Parallel Connection	Yes (with initial manual balancing)		
Serial Connection	No		
Safety Relay Control	No		
Dry Contacts	No		
Protective Vent	Yes		
Internal Self Heating	No		
Physical Properties			
Battery Case Material	PC-ABS		
Power Terminals	M8 Screw In		
Protection Level	IP65		
Humidity	5% - 85% RH (non-condensing)		
Altitude	<3000 m		
Dimension (WxDxH)	279x205x215 mm	475x205x215 mm	475x205x215 mm
Weight	13±1 kg	22±1 kg	22±1 kg

(*) Test Conditions: 25°C, 90% DOD, 0.5C Charge/Discharge
(**) Performance may vary in different conditions

Low Voltage Telecom Batteries

Basic Properties	PBT-48100	PBT-48150
Cell Type	$LiFePO_4$ - Prismatic	
Nominal Voltage	48V	
Nominal Capacity (*)	100Ah	150Ah
Nominal Energy Capacity	4.8kWh	7.2kWh
Operating Voltage Range	40V - 54.75V	
Maximum Charge Voltage	54.75V	
Standard Charge/Discharge Current	50A / 50A	75A / 75A
Max. Cont. Charge/Discharge Current	100A / 100A	150A / 150A
Limited Charge Current	10A	
Cycle Life (*)	≥6000 Cycles	
Normal Operating Temperature	25°C	
Charging Temperature	-20~55°C	
Discharging Temperature (**)	-20~50°C	
Storage Temperature	-20~60°C	
Self Discharge	Per month ≤ 3%	
Warranty	10 Years	
Functional Properties		
Communication	CAN, RS485	
Scalibility	Max. 15 units in parallel	
Cooling	Natural	
Integrated Heater	Yes	
BMS Protections	UV, OV, OC, UT, OT, SC	
LED Indicators	Alarm, Run, SOC	
High Current Protection	Externally Replaceable Fuse	
Physical Properties		
Protection Level	IP20	
Humidity	5% - 85% RH (non-condensing)	
Altitude	<3000 m	
Dimension (WxDxH) (without connector and handle)	446x400x176 mm (19 Inches - 4U)	446x400x220 mm (19 Inches - 5U)
Weight	42.5±1 kg	61±1 kg
Power Terminals	Screw Terminals	

(*) Test Conditions: 25°C, 90% DOD, 0.5C Charge/Discharge
(**) Performance may vary in different conditions

High Voltage 19-Inch Batteries

Basic Properties	PBH-51100	PBH-512100	PBH-768100	PBH-768200
Cell Type	LiFePO4 - Prismatic	$LiFePO_4$ - Prismatic		
Nominal Voltage	51.2V	512V	768V	
Nominal Capacity (*)	100Ah	100Ah		200Ah
Nominal Energy Capacity	5.12kWh	51.2kWh	76.8kWh	153.6kWh
Operating Voltage Range	44V - 56.8V	440V - 568V	660V - 852V	
Max. Charge Voltage	56.8V	568V	852V	
Standard Charge/Discharge Current	50A / 50A	50A / 50A		100A / 100A
Max. Cont. Charge/Discharge Current	100A / 100A	100A / 100A		200A / 200A
Limited Charge Current	10A			
Cycle Life (*)	≥6000 Cycles			
Normal Operating Temperature	25°C			
Charging Temperature	0~50°C			
Discharging Temperature (**)	-10~50°C			
Storage Temperature	-20~55°C	-20~50°C		
Self Discharge	≤3%/month (30-40% SOC ,25°C)			
Warranty	10 Years			
Physical Properties				
Communication	CAN, RS485	CAN		
Scalibility	Max. 15 units in series	Max. 15 units in parallel		Max. 7 units in parallel
Cooling	Fan	Fan		
BMS Protections	UV, OV, OC, UT, OT, SC	UV, OV, OC, UT, OT, SC		
LED Indicators	Alarm, Run, SOC	Alarm, Run, SOC		
Circuit Breaker	No	Integrated to Master BMS Unit		
Physical Properties				
Protection Level	IP20	IP20		
Humidity	5%-85% RH (non-condensing)	5% - 85% RH (non-condensing)		
Altitude	<3000 m	<3000 m		
Dimension (WxDxH)	446x532x160 mm	629x610x2251 mm	1258x610x2258 mm	1887x610x2258 mm
(without connector and handle)	(19 Inches - 3.5U)	(19 Inches - 50U)	(19 Inches - 50U)	(19 Inches - 50U)
Weight	40±1 kg	540±10 kg	870±15 kg	1600±30 kg

(*) Test Conditions: 25°C, 90% DOD, 0.5C Charge/Discharge
(**) Performance may vary in different conditions

High Voltage Liquid-Cooled Batteries

Basic Properties	PBQ-166300	PBQ-1331300
Cell Type	$LiFePO_4$ - 302Ah - Prismatic	$LiFePO_4$ - 302Ah - Prismatic
Series/Parallel Configuration	1P52S	1P416S
Nominal Voltage	166.4V	1331.2V
Nominal Capacity (*)	302Ah	
Nominal Energy Capacity	50.252kWh	402.022kWh
Operating Voltage Range	145.6V - 187.2V	1164.8V - 1497.6V
Max. Charge Voltage	187.2V	1497.6V
Standard Charge/Discharge Current	150A / 150A	
Max. Cont. Charge/Discharge Current	150A / 150A	
Limited Charge Current	10A	
Cycle Life (*)	≥6000 Cycles	
Normal Operating Temperature	25°C	
Charging Temperatur	0~50°C	
Discharging Temperature (**)	-20-50C	
Storage Temperature	-20~55°C	
Self Discharge	Per month ≤ 3%	
Warranty	10 Years	
Functional Properties		
Communication	CAN, RS485	CAN
Scalibility	Max. 8 units in series	Max. 16 units in parallel
Cooling	Liquid Cooling	Liquid Cooling
BMS Protections	UV, OV, OC, UT, OT, SC	UV, OV, OC, UT, OT, SC
LED Indicators	Alarm, Run, SOC	Alarm, Run, SOC
Circuit Breaker	No	Integrated to Master BMS Unit
Physical Properties		
Protection Level	IP67	IP67
Humidity	5% - 85% RH (non-condensing)	5% - 85% RH (non-condensing)
Altitude	<3000 m	<3000 m
Dimension (WxDxH)	848x1157x244.5 mm	988x1200x2390 mm
Weight	370±10 kg	3400±50 kg

(*) Test Conditions: 25°C, 90% DOD, 0.5C Charge/Discharge
(**) Performance may vary in different conditions

Hybrid Inverters

PV	PHYB-5K	PHYB-10K-3P
Max. PV Power	9000W	15000W
Max. PV Voltage	550V	1000V
MPPT Max. Input Current	15A/15A	20A/30A
MPPT Short Circuit	20A/20A	30A/40A
MPPT Voltage Range	70V-500V	160V-950V
# of MPPT Trackers	2	2
String per MPP Tracker	1	1+2
Grid Interface		
Nominal AC Output Power	5000W	10000W
Max. AC Output Apparent Power	5500VA	1100VA
Max. AC Output Power (PF=1)	5500W	11000W
Nominal AC Voltage	220V	380V/400V/415V
AC Voltage Range	150V-300V (Adjustable)	277V-520V (Adjustable)
Max. AC Output Current	25A	3*16.7A
Nominal Grid Frequency	50Hz/60Hz	50Hz/60Hz
Grid Connection	Single phase	Three phase
Power Factor	>0.99 @rated power (0.8 Lead-0.8 Lag)	>0.99 @rated power (0.8 Lead-0.8 Lag)
Battery Interface		
Compatible Battery Type	Lithium-ion/Lead-acid	Lithium-ion/Lead-acid
Battery Voltage Range	40V-60V	120V-600V
Max. Charge/Discharge Power	5000W/5000W	15000W/10500W
Max. Charge/Discharge Current	120A/120A	50A/50A
Backup Interface		
Nominal Output Voltage	230V	380V/400V/415V
Nominal Output Frequency	50Hz/60Hz	50Hz/60Hz
Nominal Output Power	5000W	10000W
Nominal Output Current	21.7A	3*15.2A
General		
Protection Level	IP65	IP65
Operating Temperature Range	-25°C~60°C	-25°C~45°C
Cooling	Natural Cooling	Natural Cooling
Dimensions (W*H*D)	515x485x175 mm	530x550x212 mm
Weight	25Kg	32Kg
General		
Communication Interface	RS485/CAN (for BMS), RS485, USB, RS485(Meter) Wifi Opt	RS485/CAN (for BMS), RS485, USB, RS485(Meter) Wifi Opt

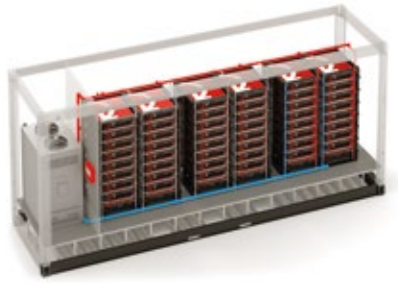
Outdoor Energy Storage Systems




Battery Properties	POD-A100	POD-A230	POD-L400
Battery Type		$LiFePO_4$	
Nominal Voltage	512V	768V	1331,2V
Operating Voltage Range	440V - 568V	660V - 852V	1144V – 1476,8V
Nominal Energy Capacity	102.4kWh	230.4kWh	402.02kWh
Cycle Life (*)		≥6000 Cycles	
Charging Temperature		0~50°C	
Discharging Temperature (**)		-10~50°C	
Warranty		10 Years	
Inverter Properties			
Max. Efficiency	97,6%(PV-AC)	97%(PV-AC)	N/A
[PV] Max. Power	65000W	2x65000W	
[PV] Max. Voltage	1000V	2x1000V	
[PV] MPPT Voltage Range	150V-850V	2x150V-850V	
[PV] Max. Input Current	36+36+36+36A	2x(36+36+36+36A)	
[PV] # of MPPT Trackers	4(2+2+2+2) Strings	2x(4(2+2+2+2)) Strings	
[BATT] Voltage Range	160V-800V	2x(160V-800V)	
[BATT] Number of Battery Input	2	2x2	
[BATT] Max. Charge/Discharge Current	50+50A / 50+50A	2x(50+50A / 50+50A)	
Communication Interphase	Screen, CAN		
[AC] Nominal Output Power	59kWh	2x50kWh	
[AC] Peak Output Power	75kWh(10sec)	2x75kWh(10 sec)	
[AC] Nominal Voltage	380V/400V, 3L+N+PE	380V/400V, 3L+N+PE	
[AC] Max. Output Current	2x79.8A		
[AC] Frequency Range	50/60Hz		
[AC] THDI	<3%Rated Power		
Physical Properties			
Protection Level		IP54	
Dimension (WxDxH)	1100x1200x2400 mm	1200x2400x2500 mm	1400x1350x2500 mm
Weight	1800kg	3200kg	6500kg
Cooling Method	Air Cooling		Liquid Cooling

(*) Test Conditions: 25°C, 90% DOD, 0.5C Charge/Discharge
(**) Performance may vary in different conditions

High Voltage Liquid Cooled 20-Foot HQ Battery Container



Basic Properties	PBQ20-6P 416S	PBQ20-10P 416
Cell Type	$LiFePO_4$ - 302Ah – Prismatic	
Series/Parallel Configuration	6P416S	10P416S
Nominal Voltage	1331.2V	
Nominal Current (*)	1812Ah	3020A
Nominal Energy Capacity	2412kWh	4020kWh
Operating Voltage Range	1164.8V - 1497.6V	
Max. Charge Voltage	1497.6V	
Cycle Life (*)	≥6000 Cycles	
Normal Operating Temperature	25°C	
Operational Temperature	-15~40°C	
Storage Temperature (**)	-20~50°C	
Self Discharge	Per month ≤ 3%	
Functional Properties		
Communication	Uplink 3xLAN, Downlink Battery Cluster 2xCAN, PCS CAN/RS485, Aux RS485	
Cooling	Liquid Cooling (Integrated Closed Loop)	
BMS Protections	UV, OV, OC, UT, OT, SC	
LED Indicators	Alarm, Run, SOC	
Circuit Breaker	Integrated Master BM of Each Cluster 1500 V 0	
Physical Properties		
Protection Level	IP54	
Humidity	0% - 85% RH (non-condensing)	
Altitude	<3000 m	
Dimension (WxDxH)	5500x2700x2896 mm	7500x2700x2896 mm
Weight	22 Tons	36 Tons

(*) Test Conditions: 25°C, 90% DOD, 0.5C Charge/Discharge
(**) Performance may vary in different conditions

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